

WHAT IS CLAIMED IS:

1. A non-contact type tonometer including:

fluid blowing means which blows fluid against a cornea of an eye of an examinee;

5 intraocular pressure measurement means which detects a deformed state of the cornea caused by the blown fluid and determines intraocular pressure of the examinee's eye based on a result of detection of the deformed state;

pulsation detection means which detects pulsation of the examinee;

10 measurement timing determination means which can determine a measurement timing based on the detected pulsation to obtain a predetermined number of results of measurement on the intraocular pressure in synchronization with different phase points in the pulsation;

15 command signal input means which inputs a command signal for execution of the measurement; and

control means which outputs a control signal for controlling driving of the fluid blowing means based on the determined measurement timing and the input command signal.

2. The non-contact type tonometer according to claim 1, wherein the measurement timing determination means determines the measurement timing based on at least a peak point and a bottom point in the pulsation phase, and

25 the intraocular pressure measurement means calculates an average value of a measurement value in a first measurement timing corresponding to the peak point and a measurement value

1005044-012802

in a second measurement timing corresponding to the bottom point .

3. The non-contact type tonometer according to claim 2 further including output means which outputs the measurement value obtained in the first measurement timing, the measurement value obtained in the second measurement timing, and the average value of those measurement values so that those values are distinguishable.

4. The non-contact type tonometer according to claim 1 further including mode selection means which selects one of a first mode of obtaining a measurement result in the measurement timing corresponding to a peak point, a bottom point, or an arbitrary point in the pulsation phase and a second mode of obtaining a predetermined number of results of measurement in the measurement timing corresponding to the peak point and the bottom point respectively, and

wherein the measurement timing determination means determines the measurement timing based on the selected mode.

5. A non-contact type tonometer including:

fluid blowing means which blows fluid against a cornea of an eye of an examinee;

intraocular pressure measurement means which detects a deformed state of the cornea caused by the blown fluid and determines intraocular pressure of the examinee's eye based on a result of detection of the deformed state;

pulsation detection means which detects pulsation of the

examinee;

measurement timing determination means which determines a measurement timing to obtain a predetermined number of results of measurement on the intraocular pressure in synchronization with an intended phase point in the pulsation, the determination means determining a measurement timing based on a pulsation previously detected and sampled;

command signal input means which inputs a command signal for execution of the measurement; and

control means which outputs a control signal for controlling driving of the fluid blowing means based on the determined measurement timing and the input command signal.

6. The non-contact type tonometer according to claim 5, wherein the pulsation detection means detects and samples pulsation within a first detection time for a predetermined time or a predetermined number of periods of the pulsation, and the measurement timing determination means determines the measurement timing corresponding to pulsation occurring after the first detection time based on the sampled pulsation.

7. The non-contact type tonometer according to claim 6, wherein the pulsation detection means successively detects and samples the pulsation even after the first detection time, and when another pulsation is newly detected and sampled within a second predetermined detection time after the first detection time, the measurement timing determination means determines the measurement timing corresponding to the pulsation occurring

after the first detection time based on the newly sampled pulsation.

8. The non-contact type tonometer according to claim 5 further including prediction means which predicts a deformation detection time required from output of the control signal until a predetermined corneal deformed state is detected,

wherein the measurement timing determination means determines the measurement timing based on the predicted deformation detection time.

9. The non-contact type tonometer according to claim 5, wherein the measurement timing determination means determines at least two measurement timings, one being a first measurement timing corresponding to first pulsation and the other being a second measurement timing corresponding to second pulsation occurring after the first pulsation, based on a sampling result on the pulsation that occurred earlier than the first pulsation.

10. The non-contact type tonometer according to claim 5, wherein the measurement timing determination means determines the measurement timing based on the previously detected and sampled pulsation when no pulsation is detected by the pulsation detection means.

11. A non-contact type tonometer including:
fluid blowing means which blows fluid against a cornea of an eye of an examinee;

10055944.012802

intraocular pressure measurement means which detects a deformed state of the cornea caused by the blown fluid and determines intraocular pressure of the examinee's eye based on a result of detection of the deformed state;

5 first pulsation detection means which detects pulsation in a first position near an eyeball of the examinee;

second pulsation detection means which detects pulsation in a second position different from the first position;

10 pulsation phase shift detection means which obtains a phase shift between the pulsations detected by the first and second pulsation detection means respectively;

15 measurement timing determination means which determines a measurement timing based on the obtained pulsation phase shift and a detection result by the second pulsation detection means;

command signal input means which inputs a command signal for execution of measurement; and

20 control means which outputs a control signal for controlling driving of the fluid blowing means based on the determined measurement timing and the input command signal.

12. The non-contact type tonometer according to claim 11 further including correction means which corrects, when the pulsation detected by the second pulsation detection means has
25 changed, the determined measurement timing based on a period of the changed pulsation.

13. The non-contact type tonometer according to claim 11,

1055944-012002

wherein the measurement timing determination means determines the measurement timing based on the previously detected pulsation by the first pulsation detection means so that intraocular pressure measurement is executed in synchronization with an intended phase point in the previously detected pulsation.

14. The non-contact type tonometer according to claim 11, wherein the measurement timing determination means determines the measurement timing based on the sequentially detected pulsation by the second pulsation detection means.

15. A non-contact type tonometer including:

fluid blowing means which blows fluid against a cornea of an eye of an examinee;

intraocular pressure measurement means which detects a deformed state of the cornea caused by the blown fluid and determines intraocular pressure based on a result of detection of the deformed state;

first pulsation detection means which detects pulsation in a first position near an eyeball of the examinee;

second pulsation detection means which detects pulsation in a second position different from the first position;

measurement timing determination means which determines a measurement timing based on the previously detected pulsation by the first pulsation detection means so that the intraocular pressure measurement is executed in synchronization with an intended phase point in the previously detected pulsation, and information means which informs that a period of the pulsation

detected by the second pulsation detection means after
determination of the measurement timing has changed.

10055944.012802